Preface

This manual is prepared for the maintenance service for the LCD Monitor. Maintenance procedures described in this manual are intended to isolate faulty parts and replace them in the field. It also aims to serve as a guide in procuring replacement parts for this product.

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This manual includes system overview, major system assembly, components' description, and the "Troubleshooting" making explanations on how to detect errors. It also includes a flow chart for checking or correcting faults.

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NOTICE :

The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in further edition.

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Chapter 1

1. Introduction

*This manual provides an integral technical information you need to maintain the LCD Monitor. And this manual is applied to the model of 1280*1024 pixels color TFT LCD Monitor with a 18.1" flat panel screen. There are seven topics in this manual, and you can immediately identify problems through this manual.*

This manual is for the technicians and people who have the electronic background. Send the product back to the distributor for repairing and do not attempt to do anything which is complex or not mentioned in the troubleshooting.

1-1 THE APPROPRIATE OPERATION

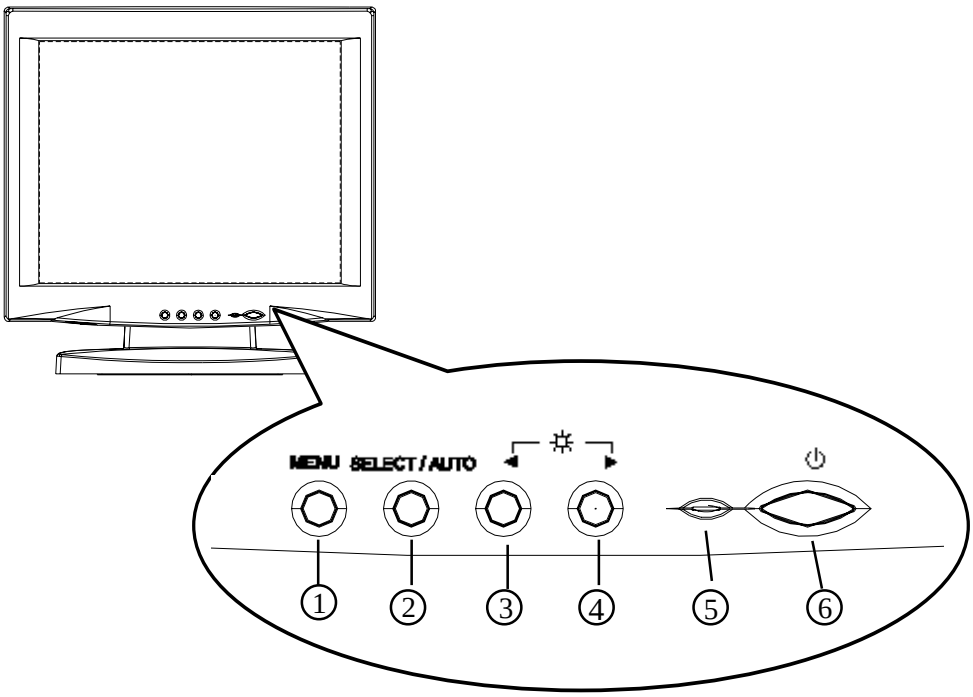
- Turn off the product before cleaning.
- Use a soft cloth moistened with mild detergent to clean the display housing.
- Use only high quality and safety approved AC/DC power adapter.
- Disconnect the power plug from AC outlet if the product is not used for a long period of time.
- Do not touch the LCD panel surface with sharp or hard objects.
- Do not use abrasive cleaners, waxes or solvents for your cleaning.
- Do not operate the product under the following conditions :
  - Extremely hot, cold or humid environment.
  - Areas susceptible to excessive dust and dirt.
  - Near any appliance generating a strong magnetic field.
  - Place in direct sunlight.

1-2 PRODUCT FFEATURES

❖ ***Display Resolution***	1280 pixels (H) * 1024 lines (V)
❖ ***Active Display Area***	359mm (H) * 287.2mm (V)
❖ ***Displayable Color***	16.7M colors
❖ ***Horizontal Scan***	24kHz to 80kHz
❖ ***Vertical Refresh***	56Hz to 75Hz
❖ ***Pixel Frequency***	135MHz
❖ ***Input Signal***	video : analog RGB 0.7Vp-p sync : separatre sync. TTL level
❖ ***Auto-adjustment***	yes
❖ ***Re-scaling***	High quality interpolation algorithm Re-scaling selection : original resolution, 1 :1 re-scaling, full screen (default)
❖ ***USB Hub***	1 upstream and 4 downstream ports on the base
❖ ***Plug and Play***	VESA DDC 1/2B
❖ ***I/O Connectors***	DC power in VGA 15-pin D-sub *2, male USB : upstream*1 / downstream*4
❖ ***User Controls***	Multilingual on-screen menu adjustments (English, German, French, Spanish, Italian) auto-save and reset capability external auto-adjustment button

❖ ***Power Saving***	VESA DPMS standard
❖ ***Power Consumptioion***	80watt (max.), 8watt (off mode)
❖ ***AC / DC Adapter***	external power adapter universal type AC 100-240V (50 / 60Hz) output : DC 12V UL, CSA, TUV, CE Mark compliant
❖ ***Stand***	tilt (-5^{O}~ 45^{O}) swivel (-45^{O}~ 45^{O})
❖ ***Mounting interface***	VESA Flat Panel Monitor Physical Mounting Interface (75mm, 100mm)
❖ ***Dimensions (W*H*D)***	443.0mm*438mm*229mm
❖ ***Weight***	9kg (preliminary)
❖ ***Agency approval***	FCC -B, CE -B, VCCI-II, BCIQ UL, CUL, TUV, TCO'95
❖ ***Environmental***	operating temperature : 5^{O} ~ 35^{O}C humidity : 80% maximum storage temperature : -20^{O} ~ 60^{O}C humidity : 80% maximum

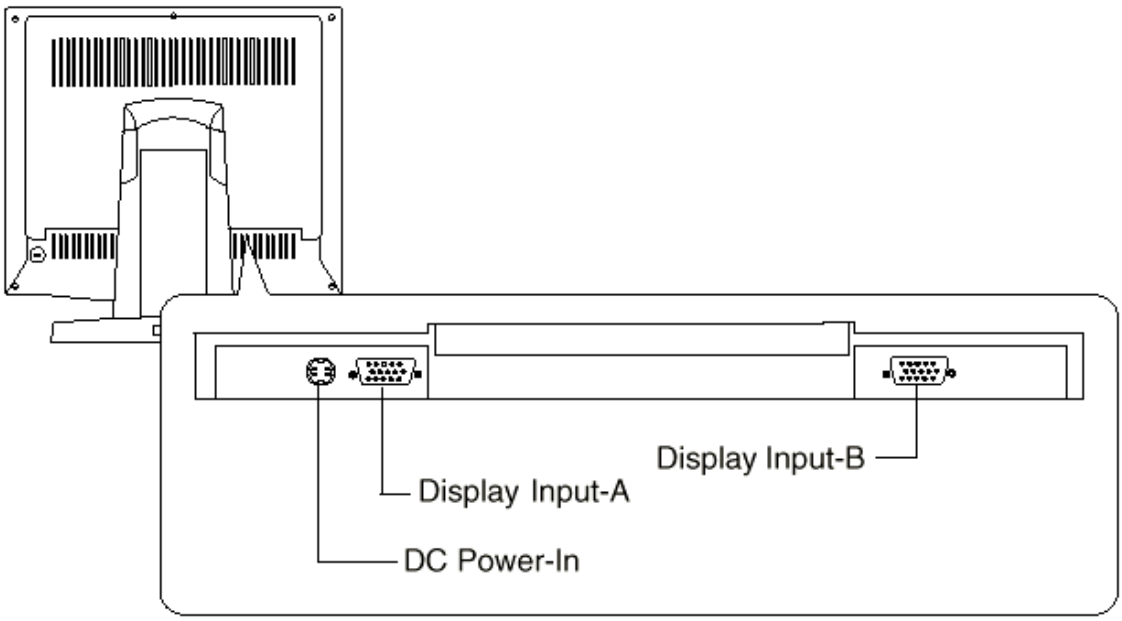
1-3 USER CONTROLS



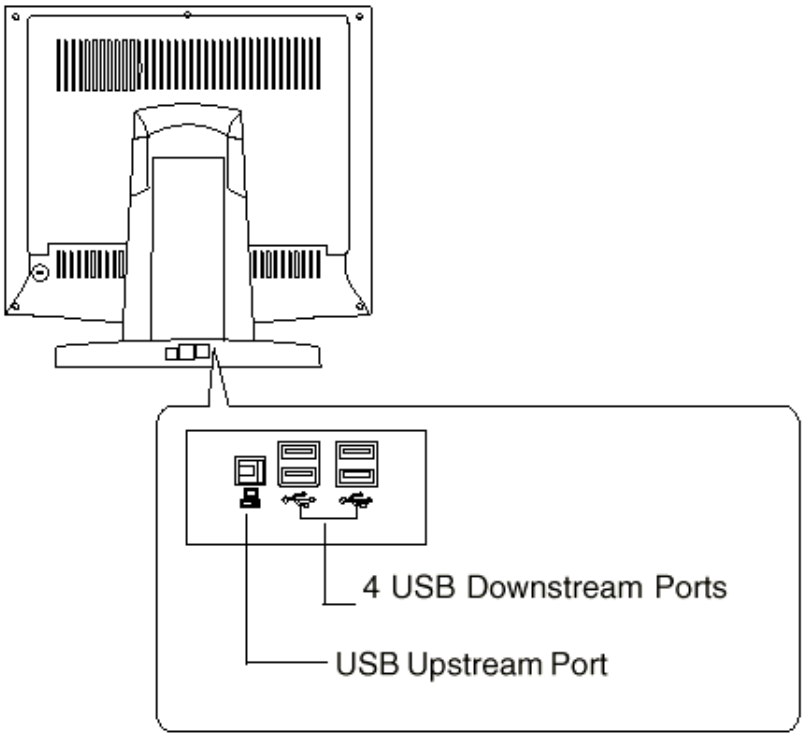
No.	*Icon*	*Control*	*Function*
①	MENU	Menu button	To pop up the OSD menus.
②	SELECT/AUTO	Select/Auto	*Select* - To select the adjustment items from OSD menus. *Auto* - To activate the "Auto Adjustment" function to obtain an optimum image.
③	◀	Brightness Minus/Minus	1. Decreases the brightness of the display image. 2. Decreases value of the adjustment items.
④	▶	Brightness Plus/Plus	1. Increases the brightness of the display image. 2. Increases value of the adjustment items.
⑤		Power LED	1. Green indicates the display is turned on. 2. Amber indicates the display in power-saving mode.
⑥	⏻	Power Switch	Switches on/off the power of the LCD display.

1-4 CONNECTION PORTS

Display Rear onnectors



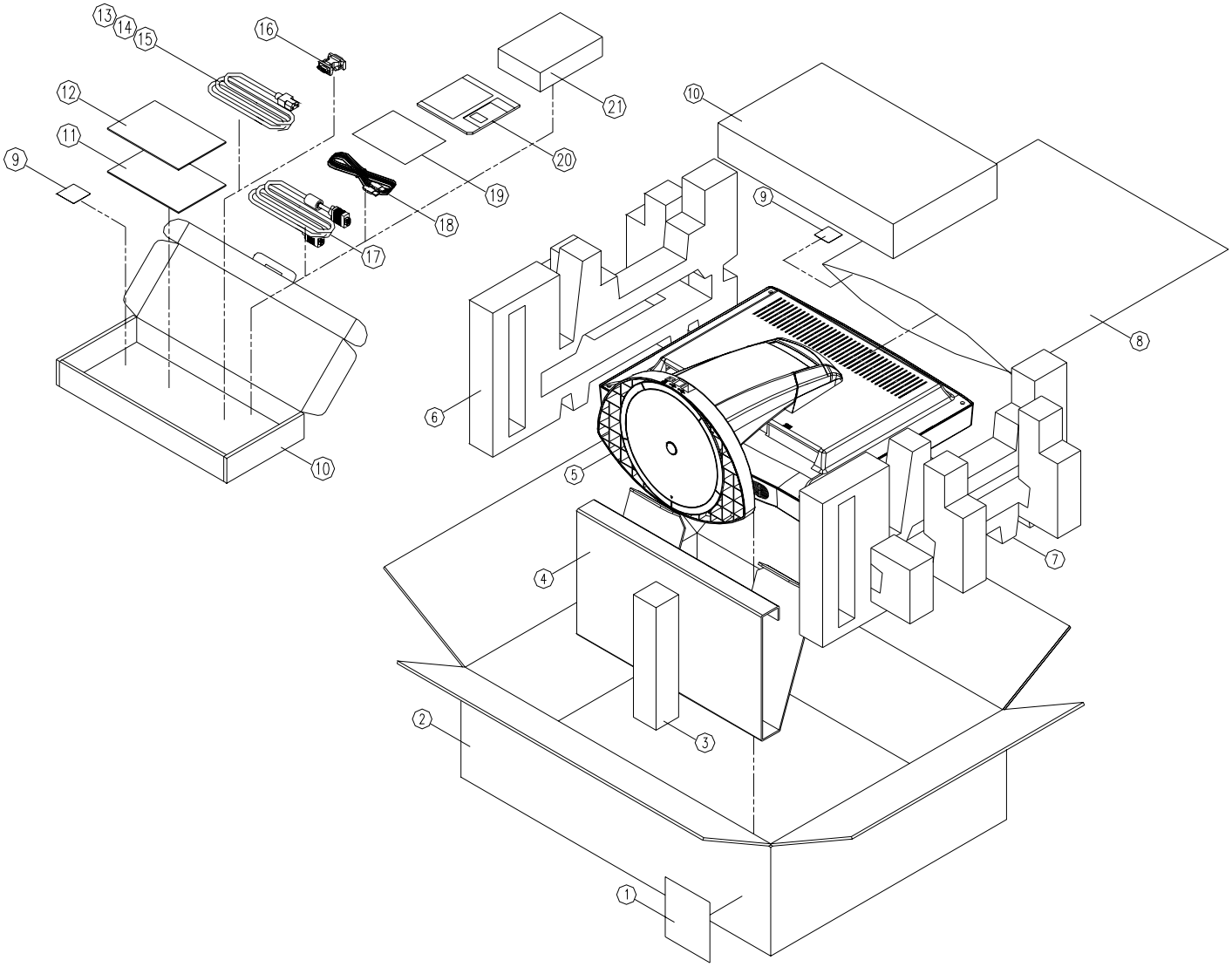
Display Stand Back USB Hub Ports



Chapter 2

2. Mechanical Construction

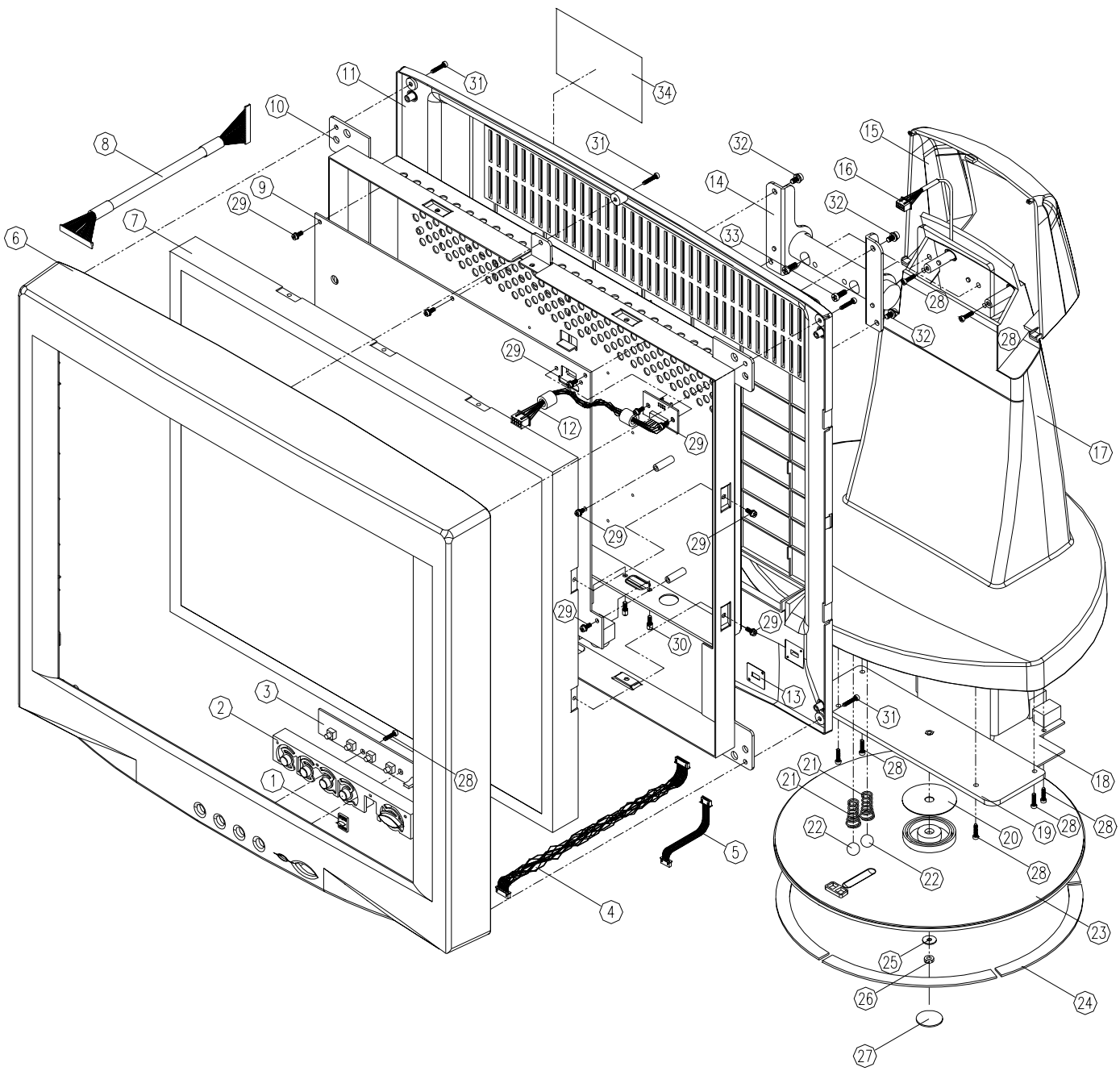
2-1 PACKAGE OVERVIEW



2-1.1 Replacement Parts List

Item	*Part #*	*Description*
1	35.52302.091	Label, Carton 108*92 Blank
2	55.56001.001	Carton, AB-18 560*530*270
3	56.54804.001	Support Cushion
4	55.56002.001	Paper Stand, 61*42 PV880
5	---	D.C. PV880
6	56.56001.001	Right Cushion
7	56.56002.001	Left Cushion
8	51.53409.001	ESD Bag LDPE PV740
9	57.00001.001	Pack SIO2 Drier
10	55.53402.001	Box 380*225*65
11	36.00007.002	Warranty Card, US for PV Series
12	36.56001.001	User's Manual Multilingual
13	42.50112.001	Cable Power Cord 1830mm SP-023+IS14 EUR
14	42.50115.001	Cable Power Cord 1830mm SP30+IS14
15	42.50116.001	Cable Power Cord 1500mm (JPN)
16	42.53605.001	Mac Adapter, 6-DIP
17	42.54601.001	VGA Cable, 15P 1800mm Carbon/Blue
18	42.54605.001	USB Cable, 4P 1800mm Black
19	35.53503.001	Disk Label 70mm*50mm
20	70.53605.001	CTX Monitor Installation Disk V1.2
21	47.56001.201	Adpater, In : 100-240V Out : 12V/5A

2-2 EXPLODED OVERVIEW



2-2.1 Replacement Parts List

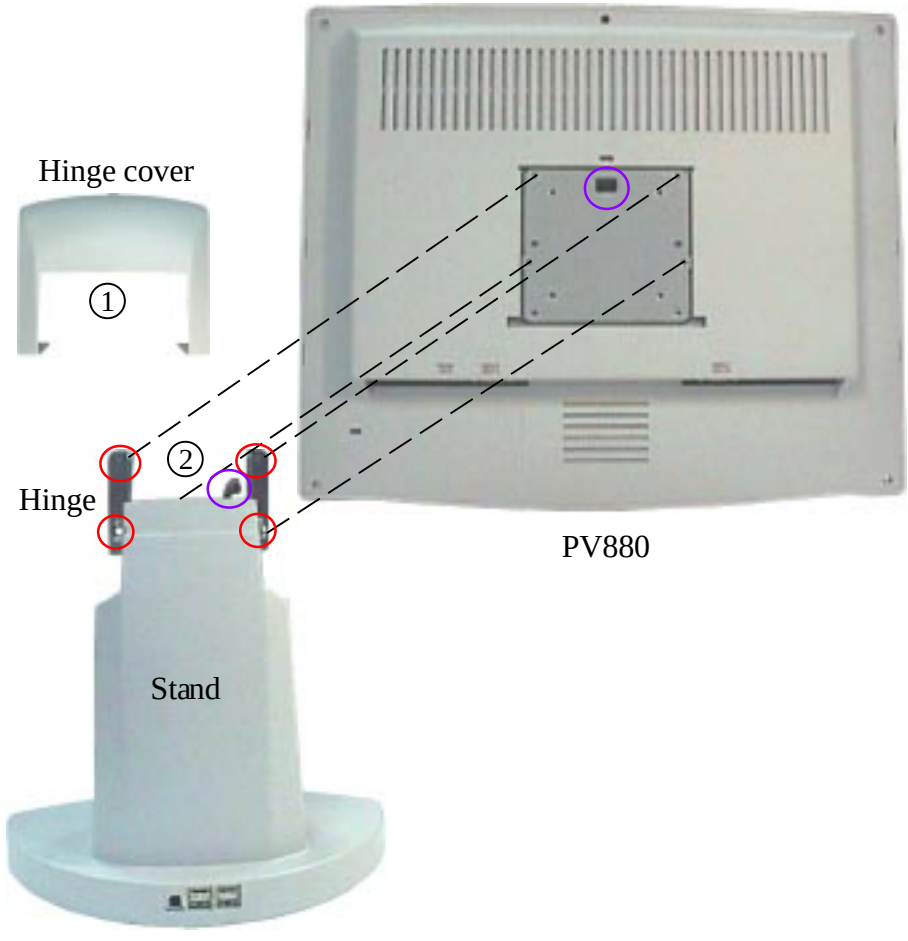
Item	*Part #*	*Description*
15	51.56005.001	Hing Cover
---	70.56001.001	ASSY Stand PV880
14	61.56003.001	Hinge
16	42.56005.001	W.A. 8/8P UL1007 #26 300mm (USB)
17	51.56006.001	Arm, PV880
18	80.56004.001	PCBA USB Board, PV880
19	61.56004.001	Arm Plate 4.0t
20	52.56001.001	Wear Plate, Tefulon PV880
21	61.56009.001	Location Spring
22	61.56008.001	Location Steel Ball
23	51.56007.001	Base, PV880
24	52.56002.001	Plstic Foot rubber
25	87.FL130.008	Washer Flat 10*3.2*0.8 Ni
26	86.0A123.032	K Nut M3*0.5P L3.2 Ni
27	52.56003.001	Foot Rubber 19.0*1.0t
28	85.WA123.120	Screw PAN TAP M3*12 Ni
33	85.2A524.100	Screw BIN MECH M4*10 Ni-L
---	70.56002.002	ASSY Main Body, PV880
---	43.52102.011	Switch Push PT-002-D1
1	51.56004.001	LED Lens PMMA PV880
2	51.56003.001	Knob
3	80.56002.001	PCBA Control BD, PV880
4	42.56001.001	W.A. 12P UL1571 #28 250mm PV880 (CTRL)
5	42.56002.001	W.A. 8/8P 150mm UL1007 #126 (INV/MAIN)

Item	*Part #*	*Description*
6	51.56001.001	Front
7	48.56001.001	TFT LCD 18.1" 1280*1024 IBM ITS*94
8	42.56003.001	W.A. 30/30P 200mm (IBM)
9	80.56001.002	PCBA Main Board, PV880
10	61.56007.001	LCD BRKT IBM 25L7702 SECC PV880
11	51.56002.001	Rear Cover
12	42.56006.001	W.A. 8/8P UL 1007 #26 130mm (MAIN/USB)
13	61.56005.001	LCD BRKT TinPlate 0.5t PV880
28	85.WA123.120	Screw PAN TAP M3*12 Ni
29	85.1F123.060	Screw PAN MECH W/SF M3*6 Ni
30	85.005AG.075	Screw Hex I/O 4-40UNC*H5*L7.5 Ni
31	85.SA123.200	Screw Binding TAP Tite-P M3*20 Ni
32	85.1F124.080	Screw PAN MECH W/SF M4*8 Ni
34	35.50702.001	Label Spec. 99*49 Blank
---	51.60201.001	LED Holder

Chapter 3

3. The Procedure of Disassembly

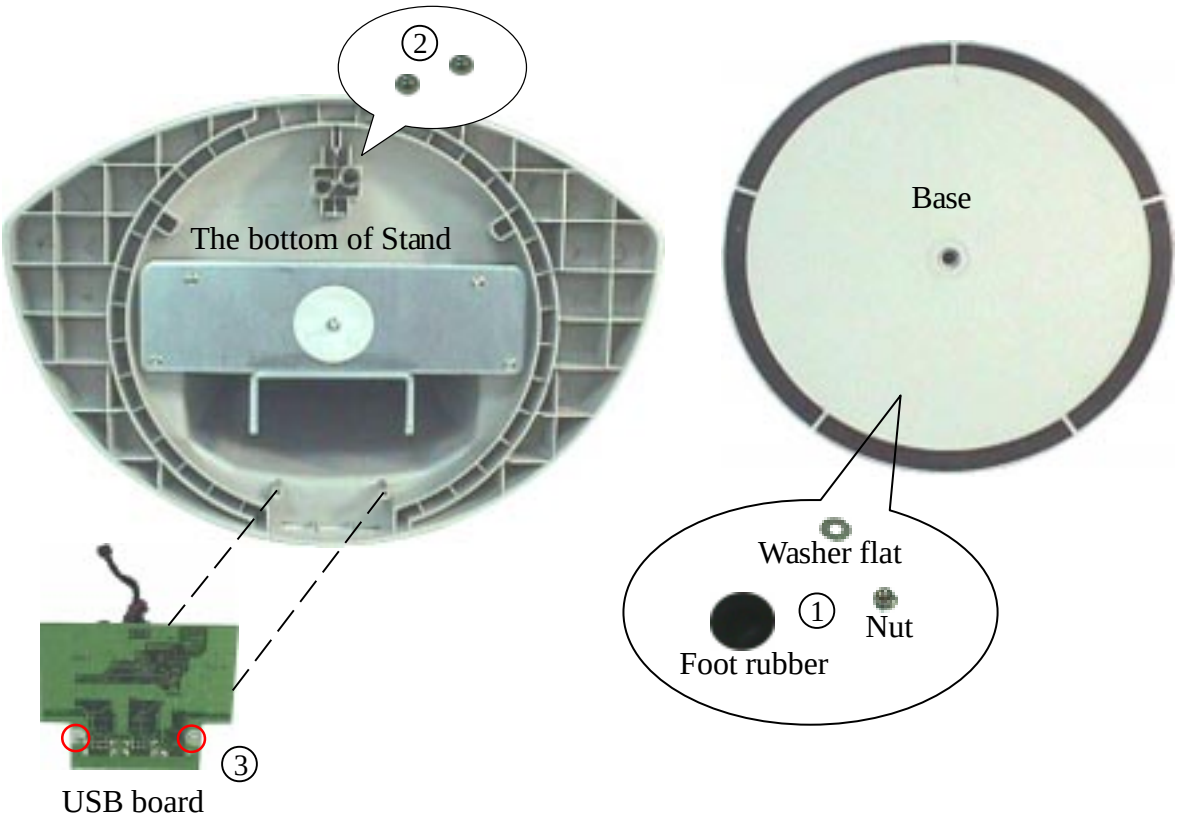
3-1 DISASSEMBLE STAND AND MAIN BODY UNIT



1. Press and pull out Hinge cover.

2. Unscrew four screws on the Hinge of Stand and unplug one connector to remove Stand & Hinge.

3-2 DISASSEMBLE STAND UNIT AND USB BOARD

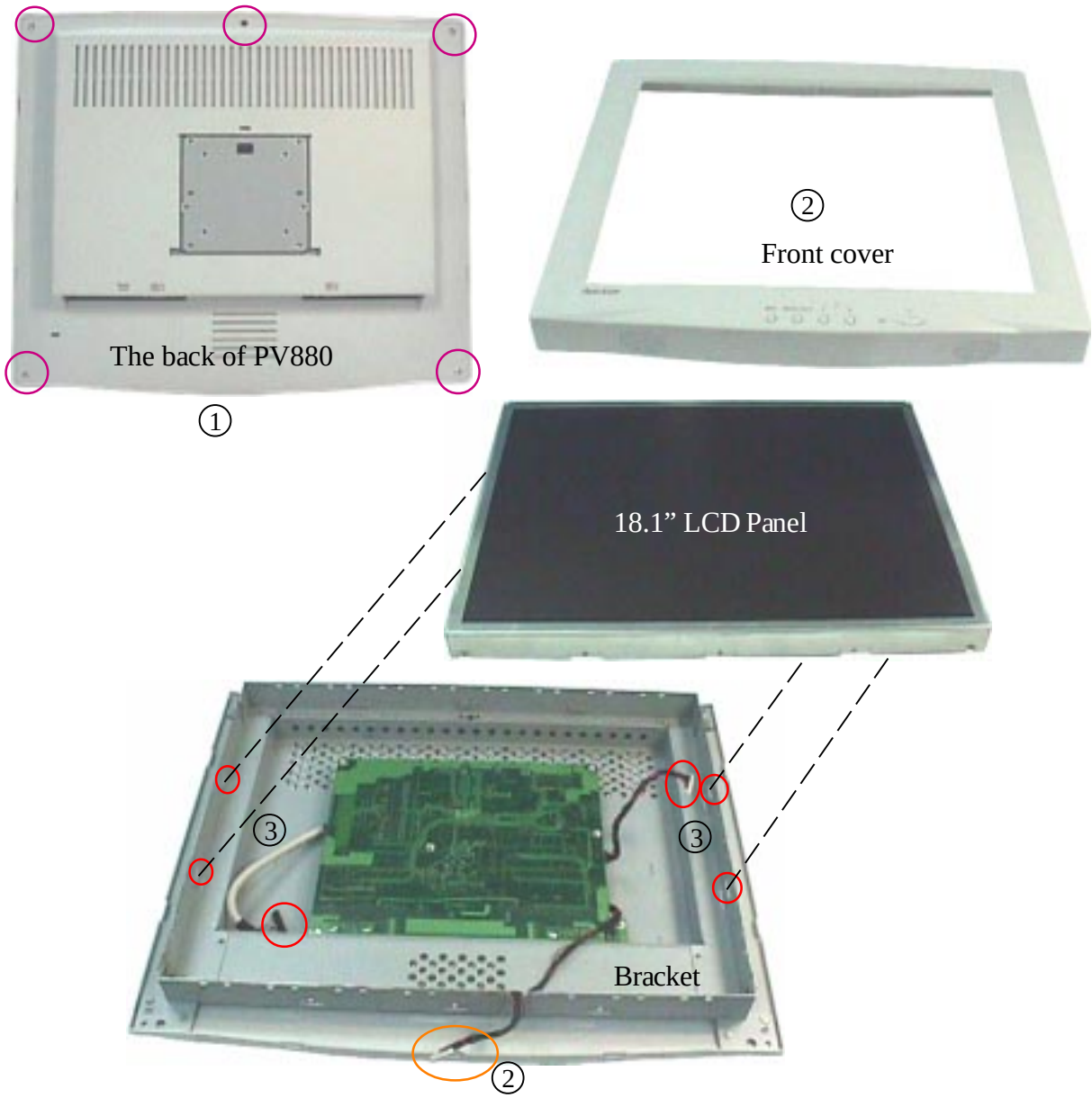


1. Take off Foot rubber and unscrew one nut & washer flat on the bottom of Stand to remove the Base.

2. Remove two Location steel balls from Location spring, and put balls in a safe place.

3. Unscrew two screws on USB board to remove it.

3-3 DISASSEMBLE FRONT COVER & PANEL



1. Unscrew five screws on the back of PV880 monitor.

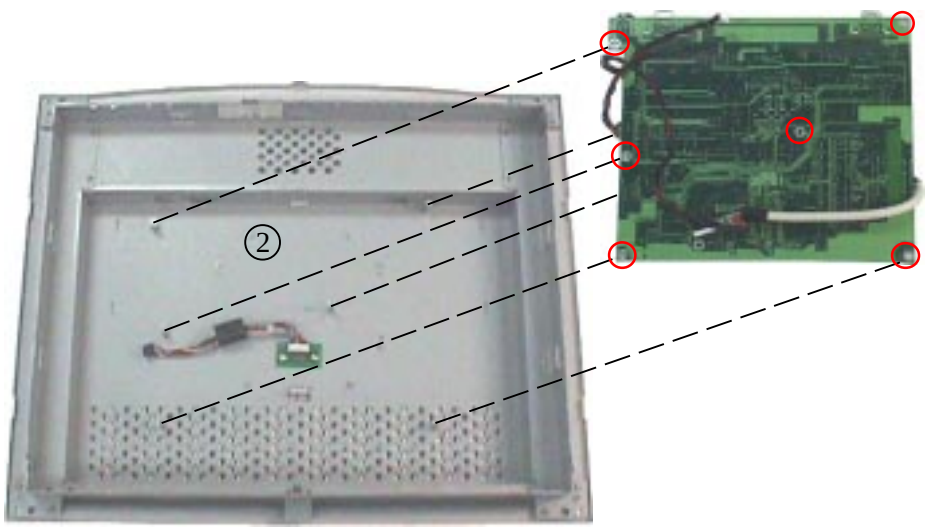
2. Turn the monitor over, press and pull up the Front cover, then disconnect the cable to Control board.

3. Unscrew four screws on two sides of LCD bracket to remove the Panel, and unplug two connectors below the Panel.

3-4 DISASSEMBLE BRACKET AND MAIN BOARD

The back of Bracket & Rear cover

Main board ②

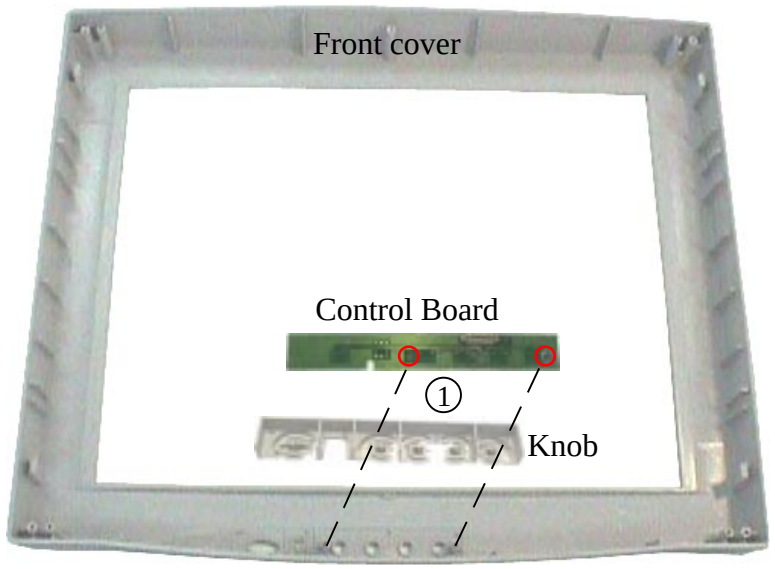


LCD bracket

1. Unscrew four hex screws on the back of Bracket & Rear cover.

2. Turn over the cover, unscrew six screws on Main board to remove it.

3-5 DISASSEMBLE CONTROL BOARD



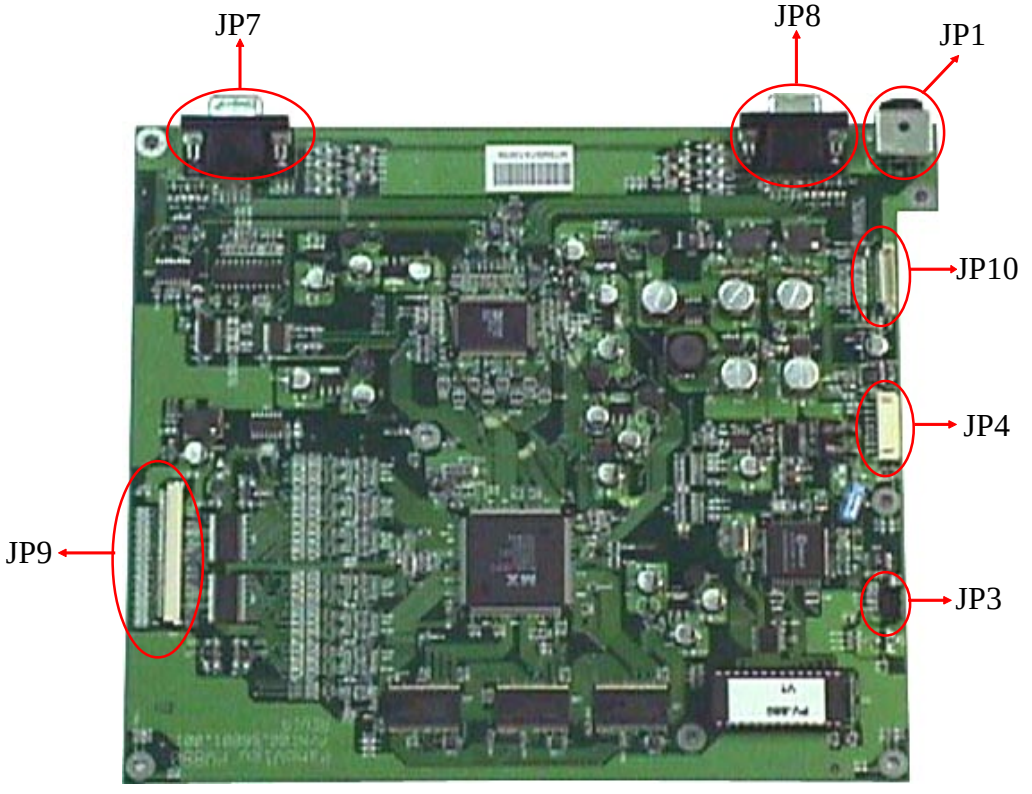
1. Unscrew two screws on Control Board to remove ctrl board and Knob.

Chapter 4

4. Function of Boards

4-1 MAIN BOARD

4-1.1 Location of connectors



4-1.2 JP1 : Power Connector

Pin#	*Signal Name*	*Function*
1	+12V	+12V Power
2	+12V	+12V Power
3	GND	Ground
4	GND	Ground

4-1.3 JP3 : USB Connector

Pin#	*Signal Name*	*Function*
1	+5V_USB	+5V Power
2	+5V_USB	+5V Power
3	+5V_USB	+5V Power
4	GND	Ground
5	IICCLK	Serial Clock (reserve)
6	GND	Ground
7	IICDAT	Serial Data (reserve)
8	GND	Ground

4-1.4 JP4 : Inverter Connector

Pin#	*Signal Name*	*Function*
1	+12VP	+12V Power
2	+12VP	+12V Power
3	+12VP	+12V Power
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	BRIGHT	Brightness Control
8	BLONA1	Backlignt On Enable

4-1.4 JP10 : Control Connector

Pin#	*Signal Name*	*Function*
1	N.C.	No Connection
2	N.C.	No Connection
3	MENU	Menu Button Input
4	SEL/AUTO	Select/Auto Button Input
5	N.C.	No Connection
6	LEFT	Left Button Input
7	RIGHT	Right Button Input
8	LED	Power on Indicator
9	LEDB	Power on Indicator
10	PSW	Power on Switch
11	GND	Ground
12	GND	Ground

4-1.5 JP7 : PC1 Connector

Pin#	*Signal Name*	*Function*
1	RIN1	Red Video Signal Input
2	GIN1	Green Video Signal Input
3	BIN1	Blue Video Signal Input
4	N.C.	No Connection
5	N.C.	No Connection
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	N.C.	No Connection
10	GND	Ground
11	GND	Ground
12	DDCDAT1	DDC Data
13	HSYNC1	Horizontal Sync.
14	VSYNC1	Vertical Sync.
15	DDCCLK1	DDC Clock

4-1.6 JP8 : PC2 Connector

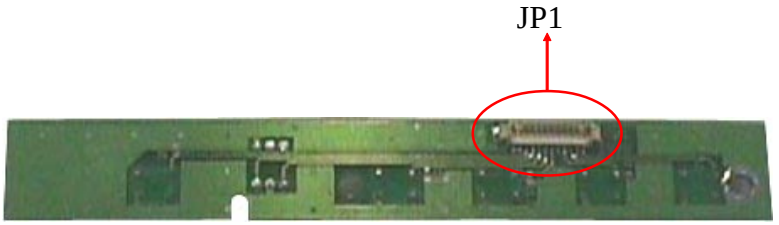
Pin#	*Signal Name*	*Function*
1	RIN2	Red Video Signal Input
2	GIN2	Green Video Signal Input
3	BIN2	Blue Video Signal Input
4	N.C.	No Connection
5	N.C.	No Connection
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	N.C.	No Connection
10	GND	Ground
11	GND	Ground
12	DDCDAT2	DDC Data
13	HSYNC2	Horizontal Sync.
14	VSYNC2	Vertical Sync.
15	DDCCLK2	DDC Clock

4-1.7 JP9 : LCD Connector

Pin#	*Signal Name*	*Function*
1	VIN	+12V Power
2	VIN	+12V Power
3	VIN	+12V Power
4	VinRTN	Ground
5	VinRTN	Ground
6	VinRTN	Ground
7	N.C.	No Connection
8	CONT	Contrast Signal Voltage Input
9	DGND	Ground
10	RxOIN3+	Positive Transmission Data of Pixels 3 (Odd data)
11	RxOIN3-	Negative Transmission Data of Pixels 3 (Odd data)
12	RxOCLKIN+	Positive Sampling Clock (Odd data)
13	RxOCKLIN-	Negative Sampling Clock (Odd data)
14	RxOIN2+	Positive Transmission Data of Pixels 2 (Odd data)
15	RxOIN2-	Negative Transmission Data of Pixels 2 (Odd data)
16	RxOIN1+	Positive Transmission Data of Pixels 1 (Odd data)
17	RxOIN1-	Negative Transmission Data of Pixels 1 (Odd data)
18	RxOIN0+	Positive Transmission Data of Pixels 0 (Odd data)
19	RxOIN0-	Negative Transmission Data of Pixels 0 (Odd data)
20	RxEIN3+	Positive Transmission Data of Pixels 3 (Even data)
21	RxEIN3-	Negative Transmission Data of Pixels 3 (Even data)
22	RxECLKIN+	Positive Sampling Clock (Even data)
23	RxECLKIN-	Negative Sampling Clock (Even data)
24	RxEIN2+	Positive Transmission Data of Pixels 2 (Even data)
25	RxEIN2-	Negative Transmission Data of Pixels 2 (Even data)
26	RxEIN1+	Positive Transmission Data of Pixels 1 (Even data)
27	RxEIN1-	Negative Transmission Data of Pixels 1 (Even data)
28	RxEIN0+	Positive Transmission Data of Pixels 0 (Even data)
29	RxEIN0-	Negative Transmission Data of Pixels 0 (Even data)
30	GND	Ground

4-2 CONTROL BOARD

4-2.1 Location of connectors

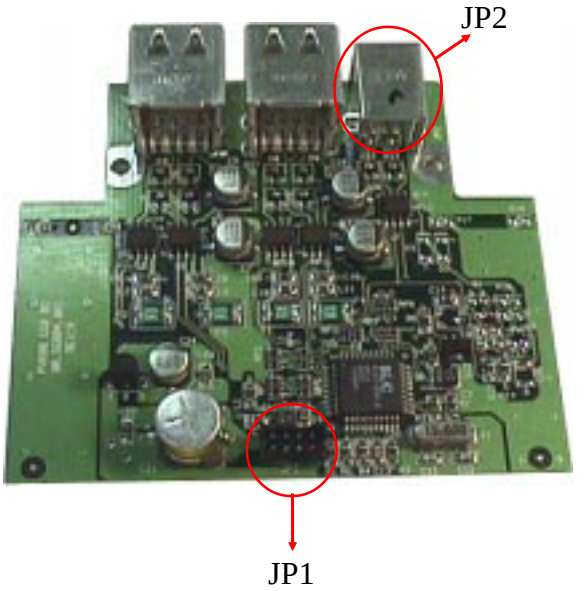


4-2.2 JP1 : Control Connector

Pin#	*Signal Name*	*Function*
1	N.C.	No Connection
2	N.C.	No Connection
3	MENU	Menu Button Input
4	SEL/AUTO	Select/Auto Button Input
5	N.C.	No Connection
6	LEFT	Left Button Input
7	RIGHT	Right Button Input
8	LED	Power on Indicator
9	LEDB	Power on Indicator
10	PSW	Power on Switch
11	GND	Ground
12	GND	Ground

4-3 USB BOARD

4-3.1 Location of connectors



4-3.2 JP1 : USB Power Connector

Pin#	*Signal Name*	*Function*
1	V5V	+5V Power
2	V5V	+5V Power
3	V5V	+5V Power
4	GND	Ground
5	N.C.	No Connection
6	GND	Ground
7	N.C.	No Connection
8	GND	Ground

4-3.3 JP2 : Connector

Pin#	*Signal Name*	*Function*
1	V5V	+5V Power
2	OD-	Serial Data
3	OD+	Serial Data
4	GND	Ground

Chapter 5

5. Troubleshooting Proceure

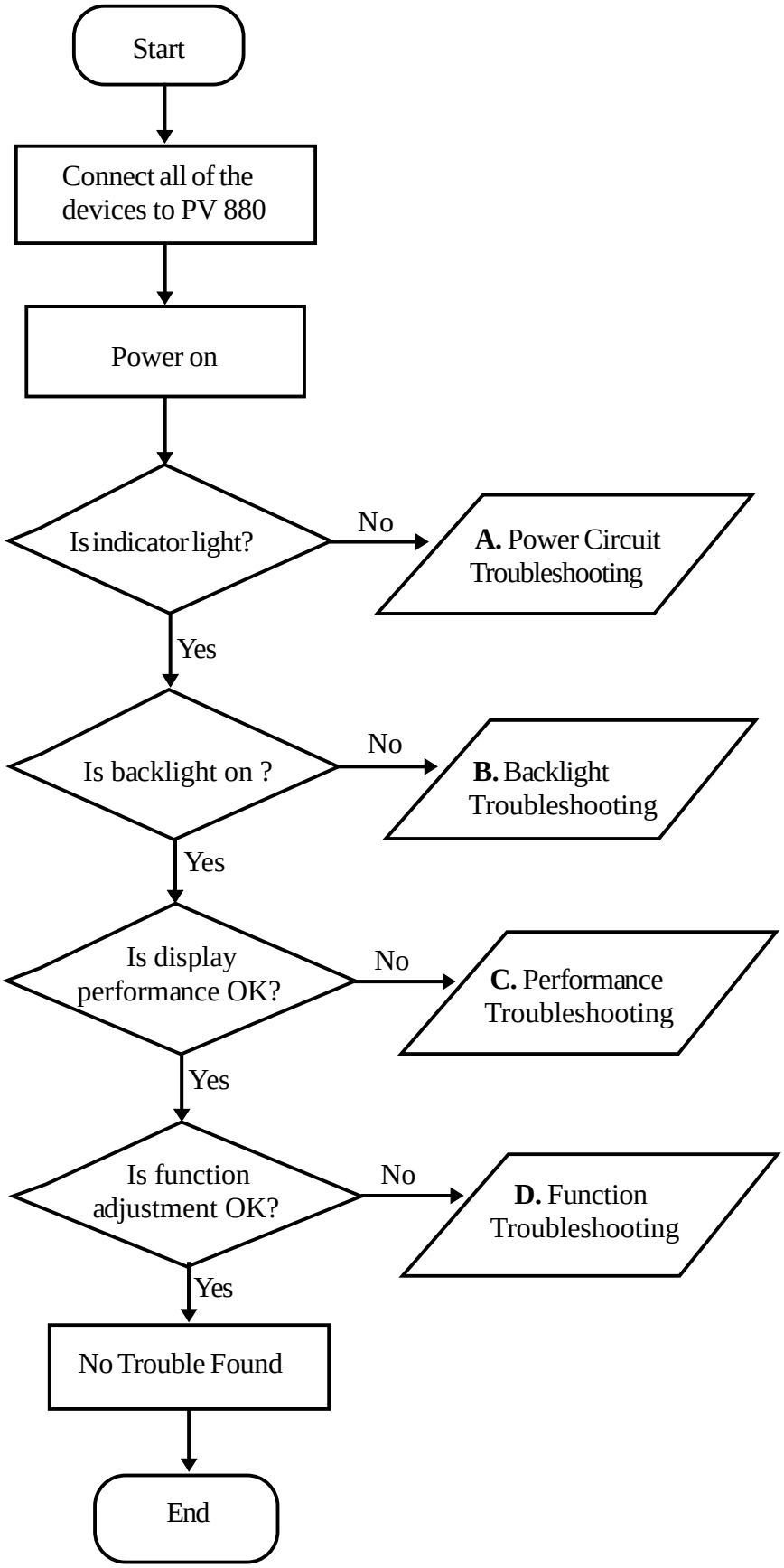
5-1 EQUIPMENT NEEDED

- PV 880
- PC (Personal Computer) with SXGA Card
- Screw driver

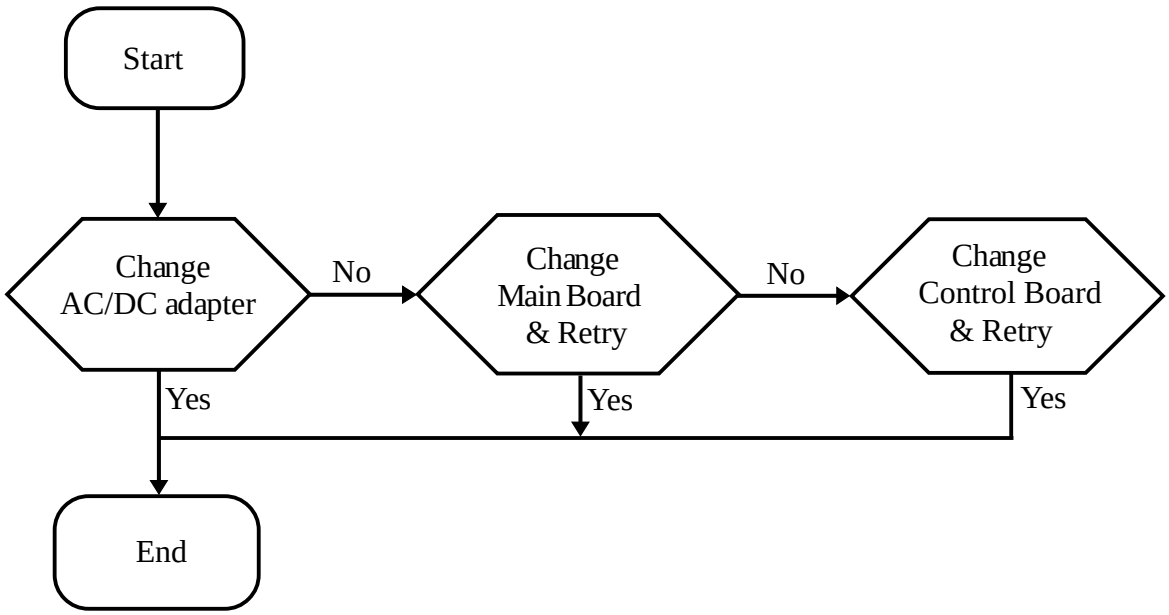
5-2 METHOD OF INSPECTING LCD MONITOR

1. Gray scale pattern & abnormal color : Test contrast function.
2. Horizontal & vertical thickness pattern : Test horizontal position, vertical position and re-scaling function.
3. Fine line morie : Test frequency & tracking function.
4. R.G.B. pattern : Dark dot defect.
5. White pattern : Dark dot defect, dark line defect.
6. Dark pattern : Bright dot defect, bright line defect.

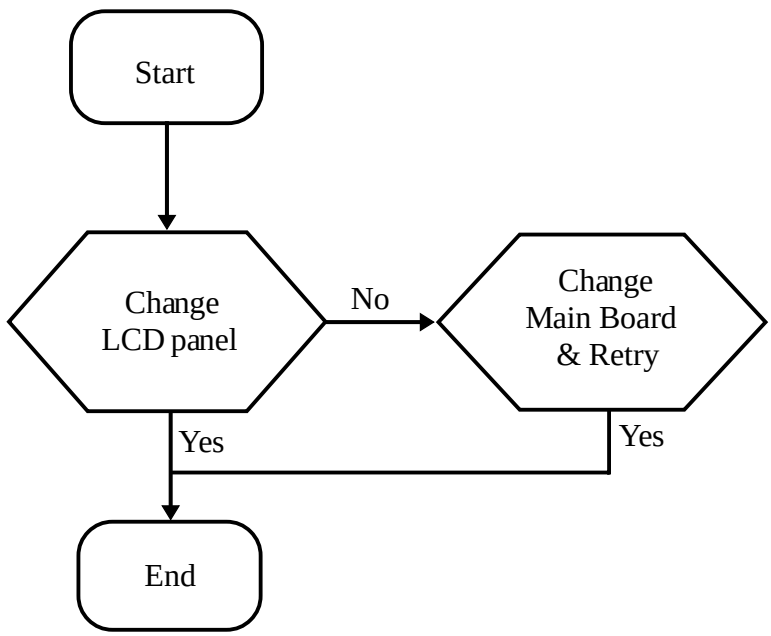
5-3 MAIN PROCEDURE



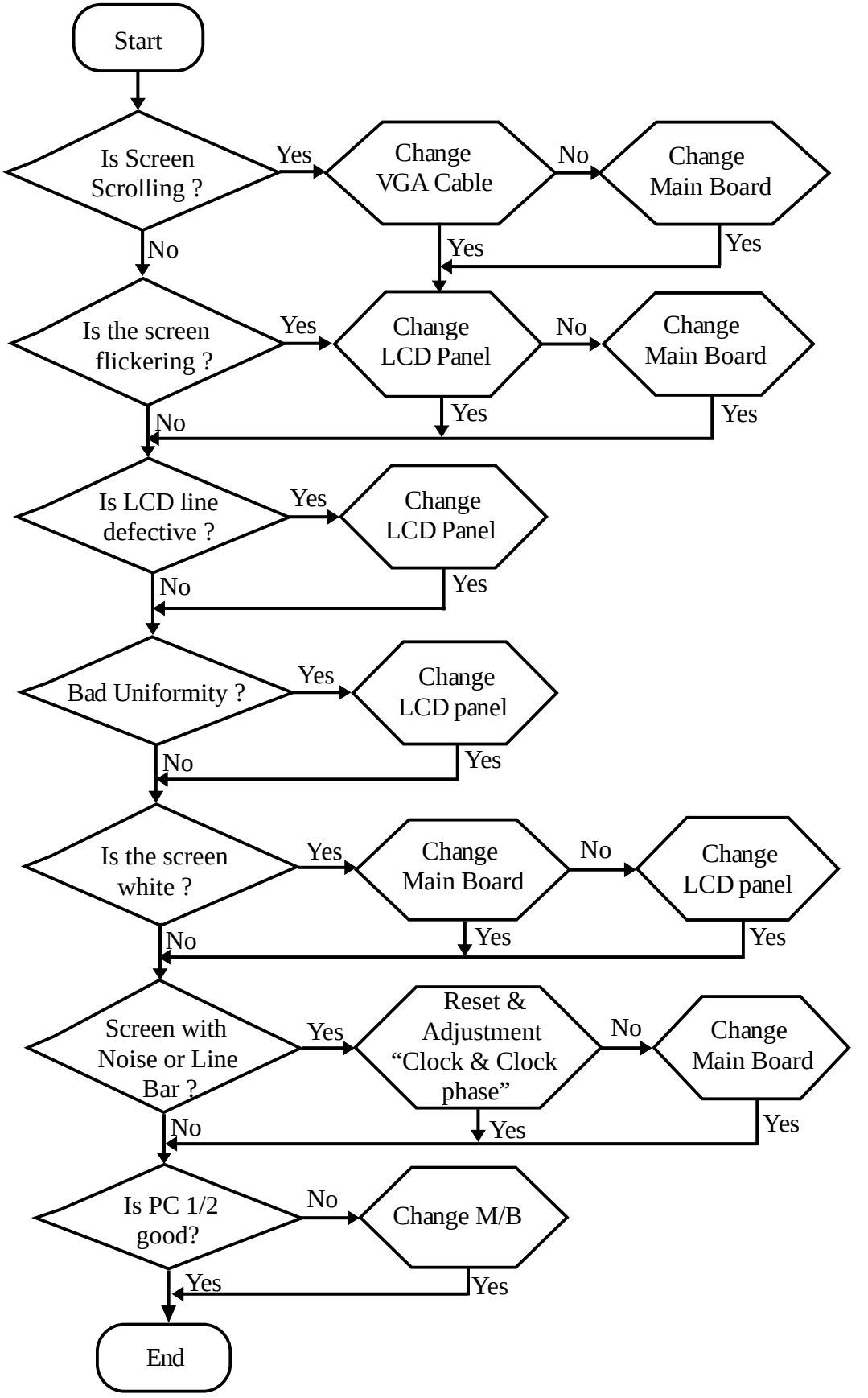
5-2.1 A. Power Circuit Troubleshooting



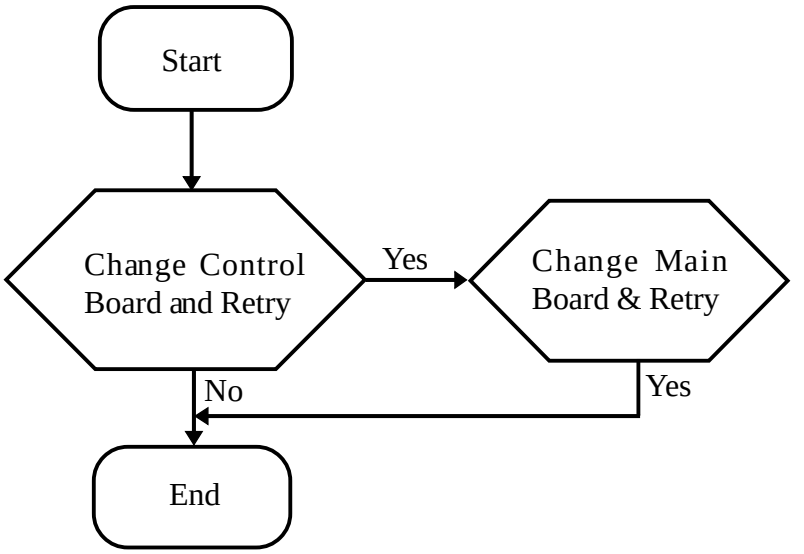
5-2.2 B. Backlight Troubleshooting



5-2.3 C. Performance Troubleshooting



5-2.4 D. Function Troubleshooting



Chapter 6

6. Function Test & Alignment Procedure

6-1. PRODUCT :

- ❑ 18.1" LCD Monitor

6-2. TEST EQUIPMENT :

- ❑ Color Video Signal & Pattern (or PC with SXGA resolution)
- ❑ Hi-pot & Grounding measurement
- ❑ Shadow gauge or Filter film of 2% and 5%
- ❑ 25X Monoscope or Blemish film

6-3. TEST CONDITION :

Before function test and alignment, each LCD Monitor should be run-in and warmed-up for at least 12 hours with the following conditions:

a). In room temperature,

b). With full-white screen,

c). With cycled display modes,

640*480 (H=31.5kHz, V=60Hz)
800*600 (H=37.9kHz, V=60Hz)
800*600 (H=46.9kHz, V=75Hz)
1024*768 (H=48.4kHz, V=60Hz)
1024*768 (H=56.5kHz, V=70Hz)
1024*768 (H=60kHz, V=75Hz)
1280*1024 (H=64kHz, V=60Hz)
1280*1024 (H=80kHz, V=75Hz)

6-4. TEST DISPLAY MODES & PATTERN

6-4.1 Compatible Modes

Standard	*Resolution*	*Vertical Refresh*	*Horizontal Scan*
IBM VGA	640*350	70	31.5
IBM VGA	640*400	70	31.5
IBM VGA	720*400	70	31.5
IBM VGA	640*480	60	31.5
VESA VGA	640*480	72	37.9
VESA VGA	640*480	75	37.5
VESA SVGA	800*600	56	35.2
VESA SVGA	800*600	60	37.9
VESA SVGA	800*600	72	48.1
VESA SVGA	800*600	75	46.9
VESA XGA	1024*768	60	48.4
VESA XGA	1024*768	70	56.5
VESA XGA	1024*768	75	60.0
VESA SXGA	1280*1024	60	64.0
VESA SXGA	1280*1024	75	80.0
Apple Mac LC	640*480	67	34.9
Apple Mac II	640*480	67	35.0
Apple Mac	832*624	75	49.7
Apple Mac	1024*768	75	60.0
NEC PC-98	640*400	56	24.8
NEC PC-98	640*400	70	31.5
NEC PC-98	640*480	60	31.5

6-4.2 Function Test Display Pattern

Item	Test Content	Pattern	Specification	Remark
1	Frequency & Tracking	Fine Line Moire	Eliminate visual wavy noise.	Figure 1
2	Contrast/Brightness	16 Gray Scale	16 gray levels should be distinguishable.	Figure 2
3	Boundary	Horizontal & Vertical Thickness	Horz. and Vert. position of video shuld be adjustable to be within the screen frame.	Figure 3
4	R,G,B, Color Performance	R.G.B Color Intensities	Contrast of each R,G,B, color should be normal.	Figure 4,5,6
5	Screen Uniformity & Flicker	Full White	Should be compliant with the spec.	Fgure 7
6	Deas Pixel/Line	White Screen Dark Screen	The number s of dead pixels should be compliant with the spe.	Figure 8

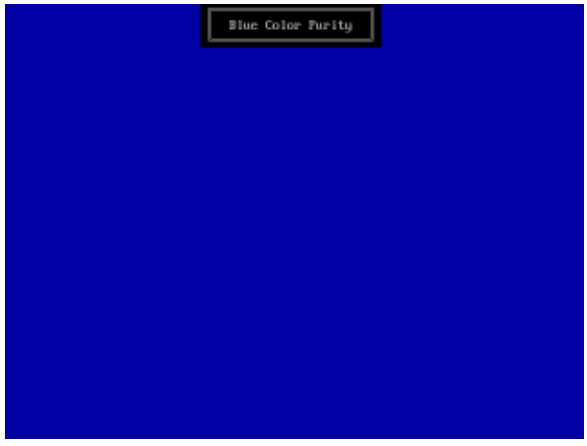
Fine Line Morie Pattern (Figure 1)

Gray Scale Pattern (Figure 2)

Horizontal & Vertical Thickness Pattern (Figure 3)

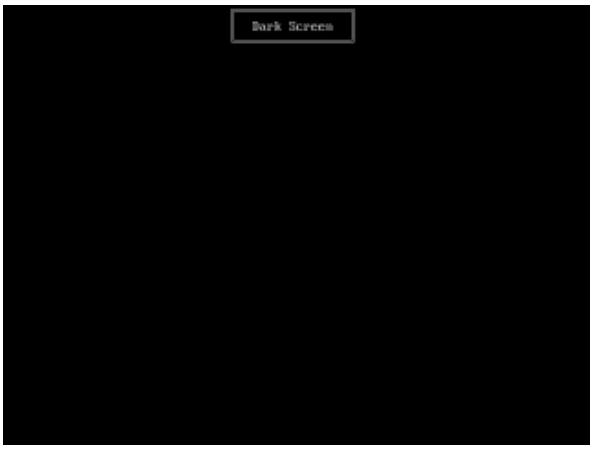
R. Color Pattern (Figure 4)

G. Color Pattern (Figure 5)



B. Color Pattern (Figure 6)

Full White Pattern (Figure 7)



Dark Screen Pattern (Figure 8)

6-5. FUNCTION TEST AND ALIGNMENT PROCEDURE

6-5.1 All Mode Reset

Please press "+" and "-" functions on front bezel and trun on **Power** simultaneously and keep unreleased for 2 seconds. Then, the screen will show "**ALL MODES RESET**". This action will allow you to erase all end-user's setings and restore the factory defaults.

6-5.2 Auto Adjustment

Please select and enter "**Auto Adjustment**" function on Main Menu to see if it is workable. The "**Auto Adjustment**" function is aimed to offer a better screen quality by built-in ASIC. For optimum screen quality, the user has to adjust each function manually.

6-5.3 Frequency and Tracking

Test Signal : 1280*1024@75Hz

Test Pattern : Line Moire Pattern

- ❖ Check and see if the image sharpness and focus is well performed.
- ❖ If not, readjust by the following steps :

(a) Select and enter "**Frequency**" function on "Advanced Menu" to adjust the screen to full screen and to eliminate visual wavy noise.

(b) Then, select and enter "**Track**" function to adjust the image to eliminate visual noise.

6-5.4 Boundary

Test Signal : 1280*1024@75Hz

Test Pattern : Horizontal & Vertical Line Thickness Pattern

- ❖ Check and see if the image boundary is within the screen frame.
- ❖ If not, readjust by the following steps :

(a) Select and enter "**Position**" function on OSD Main Menu.

(b) Then, select and enter "**Horizontal Position**" and "**Vertical Position**" function to adjust the video boundary to be full scanned and within screen frame.

6-5.5 R,G,B, Colors Contrast

Test Signal : 1280*1024@75Hz

Test Pattern : R,G,B Color Intensities Pattern and 16 Gray Scale Pwttern

- ❖ Check and see if each color is normal and distinguishable.
- ❖ If not, please return the unit to repair area.

6-5.6 Screen Uniformity and Flicker

Test Signal : 1280*1024@75Hz

Test Pattern : Full White Pattern

- ❖ Check and see if it is in normal condition.

6-5.7 Dead Pixel and Line

Test Signal : 1280*1024@75Hz

Test Pattern : Dark Screen Pattern

- ❖ Check and see if there are dead pixels on LCD panel with shadow gauge and filter film.
- ❖ The total numbers and distance of dead pixels should be compliant with the spec.

6-5.8 Check for Secondary Display Modes

Test Signal : 640*350@70.09Hz; 640*480@60/72/75Hz; 720*400@70.08Hz
800*600@56/60/72/75Hz; 832*624@75Hz
1024*768@60/70/75Hz; 1280*1024@60/75Hz

- ❖ Normally when the primary mode 1280*1024@75 is well adjusted and compliant with the specification, the secondary display modes will be great possibile to be compliant with the spec. But we still have to check with the **general test pattern** to make sure every secondary is compliant with the specification.

6-5.9 All Mode Reset

After final QC step, we have to erase all saved changes again and restore the factory defaults. Please press "+" and "-" functions on front bezel and trun on **Power** simultaneously and keep unreleased for 2 seconds. Then, the screen will show "**ALL MODES RESET**". This action will allow you to erase all end-user's setings and restore the factory defaults.

6-6. HI-POT & GROUNDING TEST

Hi-Pot Specification : 1.5KV, 10mA, 2 Sec

Grounding Specification : 12VDC, 25A, 0.1Ω

6-7. CLEANING

Please use non-alcohol cleanser to clean LCD panel and cosmetics material with soft cotton.

Chapter 7

7. Specifications

7-1 PANEL SPEC.

7-1.1 General Specifications

Screen Diagonal (inch)	*18.1*	
*Pixels H*V*	*1280(*3)*1024*	
Active Area (mm)	*359.0(H)*287.2(V)*	
Pixel Pitch (mm)	*0.2805(per one triad)*0.2805*	
Pixel Arrangement	*R,G,B Vertical Stripe*	
Weight (grams)	*3,300 typ.*	
Physical Size (mm)	*389.0(W)*317.2(H)*35.5(D) typ.*	
Display Mode	*Normally Black*	
Support Color	*16M (RGB 8-bit data)*	
White Luminance (cd/m^2)	*235 typ.*	
Contrast Ratio	*300 : 1 typ.*	
Optical Rise Time/Fall Time (msec)	*Respective* *Rise Time + Fall Time*	*: 30 typ. (each)* *: 50 typ. (total)*
Input Voltage (V)	*+12 +/- 5%*	
Power Consumption (W)	*50 max., 44 typ.*	
Electrical Interface	*LVDS Dual* *(Even/Odd/R/G/B Data(8 bit), 3sync signals, Clock)*	
Temperature Ranga (^{o}C)	*Operating* *Storage (Shipping)*	*: 0 to +50* *: +20 to +60*

7-1.2 Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Cnditions
Logic/LCD Drive Voltage	Vin	-0.3	+13.2	V	
Backlight Voltage	VBL	-0.3	+13.2	V	
Select LVDS Data Order	SELLVDS	-0.3	+3.3	V	
Contrast Control	VcontIN	-0.3	+3.3	V	
Brightness Control	VDIM	-0.3	+5.3	V	
Backlight on Signal	BLON	-0.3	+5.3	V	
Operating Temperature	TOP	0	+50	°C	Note 1
Operating Humidity	HOP	8	80	%RH	Note 1
Storage Temperature	TST	-20	+60	°C	Note 1
Storage Humidity	HST	5	95	%RH	Note 1
Vibration			1.5 10-200	G Hz	
Shock			35 20	G ms	Half sine wave

7-1.3 Display Quality

Item	Specification/Description
Any Bright Dots :	15 max.
Bright and Black Dots (total) :	20 max.
Definition :	The lit defect is a visible pixel through the neutral density filter (transmittance : 3%)
Basic Conditions :	Viewing Distance 350 to 500 mm Ambient Illumination 300 to 700 lux Ambient Temperature 20 to 25 degree C

7-1.4 CFL Life

CFL Life Time	15,000 Hours	Condition 25°C

7-1.5 Optical Characteristics

Item	Conditions	Specification		
		Min.	Max.	Note
Viewing Angle (Degrees) K : Contrast Ratio	Horizontal (Right) K ≥ 10 (Left) Vertical (Upper) K ≥ 10 (Lower)	60 60 60 60	80 80 80 80	- - - -
Contrast Ratio			300	-
Response Time (ms)	Rising (10% - >90%) Falling (90% - >10%)	- -	30 30	- -
Color Chromaticity (CIE)	Red x Red y Green x Green y Blue x Blue y White x White y	- - - - - - - -	0.633 0.345 0.287 0.616 0.141 0.090 0.310 0.346	+0.040 +0.030 +0.030 +0.030 +0.030 +0.040 +0.030 +0.030
Maximum White Luminance (cd/m^2)	VDIM = 0V	-	235	-
Minimum White Luminance (%)	(Maximum White Luminance = 100%) VDIM = 4V	-	10	20 Max.
Luminance Uniformity	Adjacent Area Screen Total	0.8 0.60		Ratio of (Ldark/Lbright) over a circular area of 10mm diameter placed anywhere on the screen. Ratio of (Ldark/Lbright) over the entire screen.

Chapter 8

8. Appendix

8-1 THE SERIAL NUMBER SYSTEM DEFINITION

8-1.1 Serial number for LCD display

A	BBB	Y	WW	C	D	BEMO	EEEE
①	②	③	④	⑤	⑥	⑦	⑧

① : A = CTX Opto, B~Z = OEM

② : Product code (ex: 560=PanoView 880)

③ : Y = Last number of the year (ex: 1998 - 8, 1999 - 9)

④ : Week of inspection

⑤ : Panel vendor code

⑥ : Electrical classification (1=110V, 2=220V, 0=universal)

⑦ : B = BIOS version, E = PCB board version,
M = Mechanical version, O = Optical version

⑧ : Serial code (from 0001~)

EX: A560935I021100023

This label "A560935I021100023" represents whole serial number for PanoView 880, including Ver. 2nd of BIOS. It's produced on 35 week of 1999 for universal area and its serial code is 0023.

8-1.2 Serial number for PCBA main board

L BB M Y M A1 AAA
① ② ③ ④ ⑤ ⑥ ⑦

① : L = LPP, M = LMT

② : BB = Model code (ex:78=PanoView 880..etc)

③ : M = Main board, A = A/V board, D = Driver board

④ : Last number of the year (ex:1998 - 8, 1999 - 9)

⑤ : M = Month (Jan.~Sep.=1~9, Oct.~Dec.=X,Y,Z)

⑥ : A1 = version (A1~AZ, B1~BZ....)

⑦ : Serial code (from 0001~)

EX: M78M97A10039

This label "M78M97A10039" represents the main board of version A1 for PanoView 880 on July, 1999. Its serial code is 0039.

25mm*14mm

✻ *Reader's Response* ✻

Dear readers:

Thank you for your backing our service manual up. In order to refine our content of the service manual and satisfy your requirement. We expect you can offer us some precious opinions for reference.

Assessment :

A. What do you think about the content after reading PV880 Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Introduction				
2. Mechanical construction				
3. Procedure of disassembly				
4. Function of boards				
5. Troubleshooting procedure				
6. Specification				
7. Appendix				

B. Are you satisfied with the PV880 service manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				
4. Print and book binding				

C. Do you have any other opinion or suggestion about this service manual?

_____

_____

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